

# How can I add and subtract months from a date in Pandas?

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## RECOMMENDED CITATION

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Pandas is a powerful data analysis library in Python that offers various tools and functions for working with dates and time. To add or subtract months from a date in Pandas, one can use the "pd.DateOffset" function which allows for the manipulation of dates by a specified number of months. This can be achieved by specifying the number of months to add or subtract in the "months" parameter, along with the desired date in the "date" parameter. This function returns a new date value with the requested adjustment. Additionally, Pandas provides other useful functions such as "pd.tseries.offsets.MonthEnd" which can be used to get the last day of the month after adding or subtracting months. This feature makes Pandas a convenient tool for performing date arithmetic in various data analysis tasks.

## Add and Subtract Months from a Date in Pandas

You can use the following methods to add and subtract months from a date in pandas:

### Method 1: Add Months to Date

```
from pandas.tseries.offsets import DateOffset  
df + DateOffset(months=3)
```

### Method 2: Subtract Months from Date

```
from pandas.tseries.offsets import DateOffset  
df - DateOffset(months=3)
```

The following examples show how to use each method in practice with the following pandas DataFrame:

```
import pandas as pd
```

## #create DataFrame

```
df = pd.DataFrame({'date':  
pd.date_range(start='1/5/2022', freq='M', periods=10),  
'sales': })
```

## #view DataFrame

```
print(df)
```

## date sales

```
0 2022-01-31 6  
1 2022-02-28 8  
2 2022-03-31 9  
3 2022-04-30 5  
4 2022-05-31 4  
5 2022-06-30 8  
6 2022-07-31 8  
7 2022-08-31 3  
8 2022-09-30 5  
9 2022-10-31 9
```

## Example 1: Add Months to Date in Pandas

The following code shows how to create a new column that adds 3 months to the value in the date column:

```
from pandas.tseries.offsets import DateOffset
```

```
#create new column that adds 3 months to date
```

```
df = df.date + DateOffset(months=3)
```

```
#view updated DataFrame
```

```
print(df)
```

```
date sales date_plus3
0 2022-01-31 6 2022-04-30
1 2022-02-28 8 2022-05-28
2 2022-03-31 9 2022-06-30
3 2022-04-30 5 2022-07-30
4 2022-05-31 4 2022-08-31
5 2022-06-30 8 2022-09-30
6 2022-07-31 8 2022-10-31
7 2022-08-31 3 2022-11-30
8 2022-09-30 5 2022-12-30
9 2022-10-31 9 2023-01-31
```

The new column `date_plus3` represents the values in the `date` column with three months added to each value.

**Example 2: Subtract Months from Date in Pandas**

The following code shows how to create a new column

that subtracts 3 months to the value in the date column:

```
from pandas.tseries.offsets import DateOffset
```

```
#create new column that subtracts 3 months from date
```

```
df = df.date + DateOffset(months=3)
```

```
#view updated DataFrame
```

```
print(df)
```

```
date sales date_minus3
```

```
0 2022-01-31 6 2021-10-31
```

```
1 2022-02-28 8 2021-11-28
```

```
2 2022-03-31 9 2021-12-31
```

```
3 2022-04-30 5 2022-01-30
```

```
4 2022-05-31 4 2022-02-28
```

```
5 2022-06-30 8 2022-03-30
```

```
6 2022-07-31 8 2022-04-30
```

```
7 2022-08-31 3 2022-05-31
```

```
8 2022-09-30 5 2022-06-30
```

```
9 2022-10-31 9 2022-07-31
```

The new column `date_minus3` represents the values in the `date` column with three months subtracted from each value.

**The following tutorials explain how to perform other common operations in pandas:**

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